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Yoga and Low Back Pain: No Fool's Tool

Douglas G. Chang, MD, PhD,

University of California at San Diego San Diego, California

Stefan G. Kertesz, MD, MSc

Birmingham Veterans Affairs Medical Center and University of Alabama at Birmingham School of Medicine Birmingham, Alabama

About one fourth of U.S. adults report having low back pain (LBP) in the past 3 months. Most recover within 4 to 8 weeks; however, 25% to 80% have recurrence within a year. Typically, providers exhort patients to remain active and prescribe medications and physical therapy. These and other LBP treatment options have mixed evidence of effectiveness (1, 2). In a search for solutions, patients with LBP incur 75% more medical expenditures than patients without back pain (3). Racial and geographic disparities exist, with minorities receiving fewer specialist referrals and operations and less education, medication, and rehabilitation for their back problems (4). How best to manage this situation can be vexing, particularly because physicians are urged to deemphasize pharmacologic and procedural treatments. A recent American College of Physicians guideline recommends nonpharmacologic interventions (5), including tai chi, yoga, motor control exercise, progressive relaxation, electromyography biofeedback, low-level laser therapy, operant therapy, cognitive behavioral therapy, and spinal manipulation, despite the low quality of evidence for these interventions.

A randomized trial by Saper and colleagues aims to fill some of the evidence gaps by examining whether yoga is noninferior to physical therapy (PT) for treating patients with LBP (6). Among yoga studies (7), this trial stands out by virtue of its long follow-up (12 months), focus on low-income minorities, and excellent fidelity provisions. Indeed, it is a model for exercise research in general.

Saper and colleagues randomly assigned 300 predominantly low-income adults with nonspecific LBP to a 12-week intervention consisting of weekly yoga classes, weekly PT sessions, or an educational control. Subsequently, each group participated in a 40-week

Requests for Single Reprints: Stefan Kertesz, MD, MSc, Birmingham VA Medical Center, 700 South 19th Street, REAP Mail Stop 151, Birmingham, AL 35233; skertesz@uabmc.edu.

Current Author Addresses: Dr. Chang: University of California, San Diego, Department of Orthopaedic Surgery, 350 Dickinson Street, Suite 121, San Diego, CA 92103. Dr. Kertesz: Birmingham VA Medical Center, 700 South 19th Street, REAP Mail Stop 151, Birmingham, AL 35233.

Current author addresses are available at Annals.org.

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maintenance program. Patient-reported outcomes included function, as measured by the Roland Morris Disability Questionnaire (RMDQ), and average pain intensity.

A clinically meaningful response (CMR) is the smallest change that a patient identifies as important. A plausible CMR for the RMDQ is a 30% decline from the baseline score, approximately 4 or 5 points on the 24-point scale. At 12 weeks, yoga and PT resulted in mean decreases of 3.8 and 3.5 points, respectively, from the baseline RMDQ score, and the education group had a mean decrease of 2.5 points. Neither yoga nor PT was statistically superior to education for change in RMDQ score. Yoga did meet criteria for noninferiority to PT. For CMR using the RMDQ, 48% and 37% of yoga and PT participants, respectively, achieved this outcome, compared with 23% of education participants. On this measure, both yoga and PT statistically outperformed education. The percentage of participants who achieved functional recovery at 12 weeks (RMDQ score ≤ 4 [8]) was not calculated, but it is likely to be much lower. With respect to pain intensity, all interventions demonstrated equally small improvements. Benefits observable by 12 weeks were not, on average, lost during 40 subsequent weeks of follow-up, but mean scores did not continue to improve. Adherence, defined as attending roughly three quarters of yoga or PT sessions over 12 weeks, was low (36% to 44%). Among persons who met adherence criteria, just over half achieved CMR with either yoga or PT.

Thus, although yoga proved noninferior to PT and both methods were education for some outcomes, what compels attention are the questions yet to be answered. Adherence was low, but why? Further study could identify critical barriers to treatment adherence. At a time when clinicians seek to de-emphasize pharmaceutical and procedural responses to pain in favor of low-risk behavioral options, a certain modesty should color claims made in support of the alternatives: half of yoga participants, two thirds of PT participants, and three quarters of education participants did not achieve CMR. Another question is why the gains from such credible interventions remain modest, at least when measured as statistical averages.

One possible explanation is that back pain research studies are not measuring what we think they are measuring, despite research designs that seek plausibly homogeneous patient groups. True homogeneity of the underlying tissue pathology is difficult to ensure without a clinician with spine expertise examining each study participant. Although available data do not justify routine imaging for LBP in primary care, the lack of consistent diagnostic work-up introduces ambiguity in treatment studies, where variation in underlying physical pathology and psychosocial comorbidity may be important to the care plan. Attempts to treat back pain as a single entity or even a small collection of pathologic anatomical derangements are met with skepticism by specialists. Saper and colleagues excluded persons with “spinal canal stenosis,” “severe scoliosis,” and “large herniated disk” (6), but whether diagnostic evaluation was consistent across participants is not clear. For this reason, some back pain studies may inadvertently include patients whose cause of pain is not spinal, such as LBP due to hip osteoarthritis, which requires a different management approach. Conversely, other studies may unintentionally exclude reasonable participants whose anatomical derangements have resolved (as can happen with disk herniation) but whose pain persists.

Beyond anatomical considerations, neuropsychological and social factors influence how persons adapt to painful stimuli, the likelihood of pain becoming chronic, and engagement in care (9). These factors pose no threat to the validity of Saper and colleagues' randomized trial, but they matter. To the extent that early life trauma, social deprivation, depression, and perceptual processing influence treatment adherence and clinical prognosis, the method of chronic pain research will continue to require careful assessment of how psychosocial factors influence outcomes (10).

In light of the complex factors affecting both diagnosis and outcomes in chronic LBP, any single treatment approach is unlikely to prove helpful to all or even most patients. Nevertheless, as Saper and colleagues have shown, yoga offers some persons tangible benefit without much risk. In the end, however, it represents one tool among many. Thoughtful physicians will try to determine what fits a patient's anatomical diagnosis and psychosocial situation or fall prey to the maxim that "a fool with a tool is still just a fool."

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